



**Total Solutions for  
Corrugated Board  
Adhesive System**



## GROWING TREND OF CORRUGATED BOARD INDUSTRY

Due to the increasing awareness of environmental conservation, it has led the higher demand of recycled paper use for corrugated board production. The requirement for quality at lower cost and less waste have created a high demand of new model corrugators that enable to work with automatic glue kitchen and carrier system by using modified starch.

Generally, manufactures use adhesive to hold the liner paper and corrugated medium together. The important key is to be able to bond the very smooth surface of recycled size pressed paper to the recycled corrugated medium. However, the least cost spent is highly demanded among producers.

## CHALLENGE & SOLUTION

To run the corrugated board production for the better quality and maintain maximum capacity, modified tapioca starch is considered as the competent option. Modified starch has seen widely accepted as an innovative, effective, and environmentally friendly adhesive solution due to its unique performance of properties.

Using only chemical additives tends to be less effective. Therefore, SMS has developed the two solutions as carrier starch and additives to serve the market challenge.



## CARRIER STARCH

SMS introduces a range of special carrier starch with different level that performs an excellent bonding ability and is customizable to any corrugated board production.

### SMS GREEN416

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- Solve delamination problem, generated from high size press paper or recycled paper
- Dosage of SMS GREEN416 is about 13-15% of total starch in the formulation
- Increase production speed (up to 5-10%)
- Reduce delamination waste about 0.5-1%
- Good viscosity stability and water holding properties

### SMS C300

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- Dosage of SMS C300 is about 10-15% of total starch in the formulation
- Reduce glue consumption due to higher bonding of adhesive
- Increase production speed due to better viscosity stability
- Improve corrugated board properties such as PAT, ECT, etc.

### SMS C200

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- Dosage of SMS C200 is about 10-15% of total starch in the formulation
- Maximize gelatinization and adhesion for sheet bond strength
- Good viscosity stability and water holding properties

## ADDITIVES FOR SUPERIOR STRENGTH

SMS formulate the effective solution to implement superior strength and increase bonding of high size press paper for corrugated board

### SMS C500

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- Dosage of SMS C500 is about 2% of total starch in the for mulation
- Increase machine speed for all grades of paper
- Able to use with all kind of glue kitchen; carrier or non-carrier system without



## GUIDELINE FOR SMS PRODUCT USAGE

Modified starch is commonly required in the mix for final solution used in the automatic glue kitchen with carrier system. The purpose is to improve the superior bonding strength, stabilize viscosity, customize production cost, and speed up machine capacity.

Both automatic glue kitchen system and SMS carrier starch could be customized by consideration of the production speed as shown in the below guide line

### SMS Product and Machine Speed Recommendation

| Corrugator Production Speed | SMS Product                |
|-----------------------------|----------------------------|
| 60 - 70 mpm                 | <b>SMS C300 / SMS C200</b> |
| 100 - 150 mpm               | <b>SMS C300 / SMS C200</b> |
| 150 - 200 mpm               | <b>SMS GREEN 416</b>       |
| 200 - 300 mpm               | <b>SMS GREEN 416</b>       |
| 300 - 450 mpm               | <b>SMS GREEN 416</b>       |

### SMS Carrier Starch Dosage Recommendation

| Procedure                  | Current Formula | <b>SMS GREEN416</b> | <b>SMS C300</b> |
|----------------------------|-----------------|---------------------|-----------------|
| 1 <sup>st</sup> Water (L)  | 385             | 350                 | 350             |
| Tapioca Starch (kg)        | 30              | -                   | -               |
| <b>SMS GREEN416</b> (kg)   | -               | 45                  | -               |
| <b>SMS GREEN416</b> (kg)   | -               | 45                  | -               |
| <b>SMS C300</b> (kg)       | -               | -                   | 37.5            |
| 50% Caustic soda (kg)      | 13.5            | 13                  | 13              |
| 2 <sup>nd</sup> Water (kg) | 645             | 760                 | 760             |
| Tapioca Starch (kg)        | 330             | 275                 | 275             |
| Borax (kg)                 | 3               | 4                   | 4               |
| Additive (kg)              | 13              | -                   | -               |
| Total glue weight (kg)     | 1,420           | 1,447               | 1,440           |
| Brookfield viscosity (cPs) | 500 - 1,000     | 600 - 800           | 600 - 800       |
| Solids content             | 23%             | 20%                 | 20%             |



## SMS Additive Dosage Recommendation

| Procedure                         | Non-Carrier System |                 | Carrier System  |                 |
|-----------------------------------|--------------------|-----------------|-----------------|-----------------|
|                                   | Current Formula    | <b>SMS C500</b> | Current Formula | <b>SMS C500</b> |
| RT water (L)                      | 1000               | 1000            | 230             | 230             |
| Add native starch (kg)            | 360                | 360             | 35              | 35              |
| Add native starch (kg)            | 360                | 360             | 35              | 35              |
| Add 1 <sup>st</sup> 33% NaOH (kg) | 29                 | 29              | 9               | 9               |
| Agitate for 10 minutes            | -                  | -               | -               | -               |
| RT water (L)                      | -                  | -               | 550             | 550             |
| Add native starch (kg)            | -                  | -               | 180             | 180             |
| Add borax (kg)                    | 4                  | 4               | 3.5             | 3.5             |
| Add <b>SMS C500</b> (kg)          | -                  | 3.5             | -               | 3.3             |
| Agitate for 5 minutes             |                    |                 |                 |                 |
| Total glue weight                 | 1,393              | 1,397           | 1,008           | 1,011           |
| Brookfield viscosity (cPs)        | 400 - 600          | 500 - 800       | 500 - 800       | 500 - 800       |
| Solids content                    | 24%                | 24%             | 20%             | 20%             |

The information provided in this brochure is used as a guideline for using these products. The technical personnel of SMS will be happy to provide detailed application advice in close consultation in order to meet the specific requirements.

### About SMS

The global leader of Non-GMO TAPIOCA STARCH AND MODIFIED TAPIOCA STARCHES from THAILAND is internationally certified with BRC, FSSC 22000, FDA, HACCP, ISO, HALAL, KOSHER.

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